

d. **Remarks**

**REJECTIONS**

**At page 2, the Office Action rejects claims 1-21 as obvious over Takahashi et al (i.e., U.S. Patent 4,916,534).**

Claims 1 and 13 recite a “compound GRIN lens including first and second serially coupled GRIN lenses of different pitch”. The application defines the pitch of a GRIN lens as follows:

For a GRIN lens, the pitch is the length of the lens material that would produce two full oscillations in a light beam's width, ...

Application, page 4, lines 6 – 8.

With respect to the above features of pending claims 1 and 13, The Office Action states:

Although Takahashi et al do not explicitly disclose compound GRIN lens configuration, Takahashi et al show in figure 17 where the GRIN lenses 40 and 41 are substantially compounded with varied refractive index, i.e., each lens having different pitch (col. 8, lines 47-53).

Office Action, sentence bridging pages 2 – 3.

That is, the Office Action seems to state that the configuration of Takahashi's figure 17 inherently serially couples GRIN lenses of different pitch as in pending claims 1 and 13.

Applicant finds nothing in Takahashi's Fig. 17 to suggest that the pitch of lens 40 is different from the pitch of lens 41. In particular, Applicant finds nothing in Fig. 17 to suggest that “the length of the lens material that would produce two full oscillations in a light beam's width” is different for lens 40 than for lens 41. Even if Takahashi's lenses 40 and 41 had different lengths, the lenses still could have the same pitch, because a GRIN lens may have a length that differs from its pitch. Thus, Takahashi's Fig. 17 does not show that lenses 40 and 41 necessarily have different pitches as would be needed to show such a feature by inherency.

Applicant also finds nothing at Takahashi's col. 8, lines 47 – 53, to suggest that the pitch of lens 40 is different from the pitch of lens 41. Indeed, this portion of Takahashi states:

**FIG. 17** shows an Embodiment 13 of the present invention wherein radial-gradient refractive index lenses (radial-GRIN lenses) 40 and 41 in which the refractive index is varied from their center portions to their peripheral portions respectively are used in place of the lenses 29 and 30 in the embodiment shown in FIG. 15.

Takahashi, col. 9, lines 47 – 65 (underlining added).

While this portion recites radial-GRIN lenses “40 and 41 in which the refractive index is varied from their center portions to their peripheral portions”, such a recitation neither suggests that GRIN lenses 40 and 41 have different pitches nor suggests varying the pitch of one of GRIN lenses 40 and 41. Instead, an ordinary GRIN lens has a refractive index that varies with distance from the central axis of the lens. Thus, the underlined portion of Takahashi, i.e., “refractive index is varied from their center portions to their peripheral portions”, simply describes the radial index variation that defines a GRIN lens. Nothing in at col. 8, lines 47 – 53, of Takahashi suggests coupling GRIN lenses of different pitch as in amended claims 1 and 13.

For the above reasons, the Office Action does not cite a prior art teaching for the feature of a “compound GRIN lens including first and second serially coupled GRIN lenses of different pitch” as recited in pending claims 1 and 13. Due to the absence of a prior art citation for this feature, the Office Action has not provided a prima facie case of obviousness. Thus, the rejections of independent claims 1 and 13 should be withdrawn.

The rejections of claims 2 – 12 should be withdrawn, at least, due to their dependence on claim 1.

The rejections of claims 14 – 21 should be withdrawn, at least, due to their dependence on claim 13.

### CONCLUSION

For the above reasons, Applicants respectfully requests allowance of claims 1 – 21 as presently pending.

In the event of any non-payment or improper payment of a required fee, the Commissioner is authorized to charge or to credit Lucent Technologies Deposit Account No. 12-2325 as required to correct the error.

Respectfully,



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